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ABSTRACT

Problems and processes of establishing a comprehensive data register to serve the Fresno City Unified School District and other local governmental units are discussed as part of PROJECT DESIGN, funded under ESEA Title III. The objective of the report is to examine the present state of data collection and dispersal in the Fresno area and to suggest techniques and procedures to develop a centralized system. The data register is recommended as the most feasible approach to serving the school district and other agencies of local government who require information about the area on a regular basis. A related document is EA 002 851. (MF)

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PROJECT Design

INTERAGENCY PLANNING FOR URBAN EDUCATIONAL NEEDS

35. INTER-AGENCY EDUCATIONAL PLANNING

COMMUNITY DATA REGISTER

JUNE, 1969

A TITLE III ELEMENTARY AND SECONDARY EDUCATIONAL ACT EXEMPLARY PROJECT

ADMINISTERED BY THE FRESNO CITY UNIFIED SCHOOL DISTRICT

FRESNO CITY UNIFIED SCHOOL DISTRICT

Board of Education

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PROJECT DESIGN (Interagency Planning for Urban Educational Needs) was organized as a two year projec to develop a comprehensive long-range Master Plan of Education for the Fresno City Unified School District in California. Funded by the United States Office of Education from Title III provisions of the Elementary and Secondary Education Act, its intent was to bring under one umbrella current major problems of the schools, the relationship of the schools to the broader community, the impact of educational change now occurring throughout the nation, and a fresh view of the educational needs, goals and aspirations of our youth and adults. The utlimate purpose of the project was to weld into an integrated plan the best use of available resources to meet the totality of current and projected educational needs. Design and application of such a comprehensive urban, interagency, educational planning model was an innovative planning project far exceeding in scope any known prior education master plan.

The first year of the project was organized to assess current and projected needs in the urban area served by the Fresno City Schools with particular reference to certain identified major problems. Development of new interagency planning relationships with major governmental and community groups was an optimum goal.

Second year activity focused upon generating and evaluating practical alternate solutions and designing short-term, intermediate and long-range recommendations in harmony both with the predictable future and with current constraints and limitations.

The work presented or reported herein was performed pursuant to a Grant from the U. S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U. S. Office of Education, and no official endorsement by the U. S. Office of Education should be inferred.

FOREWORD

In designing an Educational Master Plan for the Fresno City Unified School District, the project staff recognized the imperative for cooperative interagency planning and data exchange. The same processes and much of the same basic demographic, physical and economic data are as vital to other sectors of community development as they are to education.

It was readily apparent that urban problems have become severe and complex at a much greater rate than have the mechanisms for solving urban problems. Long-range community planning cannot be considered a simple task of projecting data and trend lines because planners and community leaders are swamped with current community problems and rapidly changing values about various alternative courses of action.

Fresno, while more sophisticated than many areas in respect to cooperative study, planning and community activity, must also improve its procedures to insure the orderly compatibility of various types of development, to agree on community-wide goals and priorities, and to eliminate waste as in gathering data. Worse than confusion, drift or duplication, however, is the totally stifling effect which inadequate procedures can have on educational or other planning for vital community development.

Leaders of community organizations and elected and appointed officials of governmental agencies involved with the project were not only generously cooperative, but most supportive and agreed upon the necessity for improved interagency planning in such areas as education, health, recreation, welfare, transportation, housing, land use and economic development.

Harold Tokmakian, Professor and Chairman of the Department of Urban and Regional Planning at Fresno State College, was commissioned to study this problem and to make recommendations for inclusion with other project recommendations in the Educational Master Plan. Among his qualifications to provide expert counsel were his past service as Planning Director for Fresno County and his intimate knowledge of urban area needs, existing urban development studies and plans, local planning processes and key figures in the many agencies concerned.

His goals were to develop models for both an optimum community planning process and a community planning data register, to assess present conditions against these models, and to chart practical recommendations to overcome major mismatches.

His findings and recommendations are made in two reports under the general heading, INTERAGENCY EDUCATIONAL PLANNING. Publication #34 deals with the COMMUNITY PLANNING PROCESS; #35 with a COMMUNITY DATA REGISTER.

Edward E. Hawkins, Project Director

COMMUNITY DATA REGISTER

Phase Two
Interagency Planning for Urban Educational Needs

prepared for the Fresno City Unified School District
June 1969

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Preface

This report, part of Phase Two, Interagency Planning for Urban Educational Needs (Project Design) contains a discussion of the problems and process involved in setting up a comprehensive data register to serve the Fresno City Unified School District as well as other agencies of local government who require continuing information about the area on a regular basis. The objective of the report is to examine the present state of data collection and dispersal in the Fresno area and to suggest techniques and procedures to develop a centralized system.

The author wishes to express his appreciation to the numerous local agencies and their staffs who assisted in the preparation of this report by providing basic information needed and for taking the time to search out obscure details.

Special acknowledgment should be given to Mr. Barry Rosenblatt and Mr. David Mayer, graduate students in the Department of Urban and Regional Planning at Fresno State College. As research assistants, they provided valuable contributions to the materials used to prepare this report.

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Introduction

In today's complex and interdependent world all decision making requires a ream of supporting information for justification. Most public and private agencies collect a wide variety of data on a more or less continuing basis. There has arisen an increasingly greater need for interchange of this information between agencies. This exchange is seen as valuable in coordinating programs of various agencies, such as school site locations which require cooperation of both schools and local government. It is often also a matter of economy to use data gathered by some other agency rather than making a separate collection for each program or agency.

At this point in the development of our local metropolitan area it has become apparent that there is such a large and diverse number of agencies and groups involved in data collection that present attempts at informal cooperation and coordination of data exchange are touching only the surface of what might be possible. A formal attempt needs to be made to accumulate information about all of these data elements into a central register that could then be used to aid in the retrieval of data by the cooperating agencies.

If the policies plan approach to decision making is adopted the need for a data register and, in fact, a central data system becomes imperative. Once primary policies are adopted

for a community as a whole then all agencies--public and private--will need common, interrelated basic data about the community, past, present and future, to aid in the establishment of level two policies. For an example, if a community adopts the policy to provide equal educational opportunity for all citizens;then in developing level two policies the school district must have information about the present level of education of all citizens, the numbers to be educated in the future, the education needs in terms of future employment, the accessibility of educational facilities, etc. The Economic Opportunities Commission will need to know the number of adults needing retraining, the number of children who will need Headstart, the kind of employment opportunities available now and in the future, etc. The Health Department will need information about nutrition of families, about their income, about incidence of disease, etc. In other words, all agencies involved in any particular policy will need considerable data on a continuing basis to proceed with the policies plan. Decisions with greater cognizance are possible by local agencies if provided with a more substantial information base.

Problems of Data

Basic to any data system are the problems inherent in data itself. It is these problems that have prevented effective data exchange in the past. The term data itself has a wide, rather illusive definition: "factual material used as a

basis especially for discussion or decision: information." [1] Our study is principally concerned with primary data; that is data from its original source of collection. Three particular problems concern the data itself and must be solved at some point in the development of a system. These are problems of comparability, accessibility and transformability.

Problems of comparability must be resolved or data from one source is either not usable, or the utility is decreased for the purpose of other organizations.

Problems of accessibility deal with obtaining data from one agency's files for use by another. It encompasses the limitations as to its use and the agreement necessary for such cooperative arrangements.

Transformability relates to the more routine problems of converting data in one form to a more useful but different form for a wide variety of users. It involves media, format and coding transformation; data translation (converting from the language of the collector to the language of the user); and data manipulation (the process of translating raw data into usable information).[2]

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[1] Webster's Seventh New Collegiate Dictionary, G. and C. Merriam Co., Publishers, 1967, p. 210.

[2] TRW Systems Group, California Regional Land Use Information System Project, Second Interim Report, Aug. 1967, p. 2-1 to 2-3.

Statewide Trends

On a statewide level there have been several recent attempts to develop a model data and information system. In 1965 the State of California contracted with Lockheed Missiles and Space Co. to design a statewide information system using electronic data processing. The proposed plan envisioned a system that involved voluntary participation by local government units in a federated statewide system. It would be a "computer based system joining semi-autonomous computer centers in an automated means for exchanging information."[3] The Information Central would contain an index to all data included in the system, rather than storing the data items themselves; it would thereby become a communications network for widespread computer centers and points of inquiry connected to the system. A ten-year development period was proposed to make the project operational. In 1966 the Legislature of California considered adoption of the plan with A.B. 89 but that measure failed to pass.

In June 1966 the State Department of Finance contracted with TRW to develop a statewide land use information system, using Santa Clara County as a model to demonstrate the benefits of such a system. The study phase of this project revealed that "even though many of the agencies in the State have sophisticated data processing and analysis capabilities, in most cases the quality of the data itself precludes its use

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3 Lockheed Missles and Space Co., California Statewide Information System Study, Final Report, Sunnyvale, Calif., Lockheed Aircraft Corp., 1965, p. 2-16.

by other than the agency which originally collected it..."[4] This study accepted present practices in the collection, storage and interchange of data as a baseline for analysis and built the system and improved the methods from there. The system, unfortunately, has never been put into operation. Recommendations made in the report are as follows:

a. Improve the comparability of the data that is to flow through California Land Data System.
b. Improve accessibility to land data.
c. Improve the ability to transform data from one format to any other.
d. Improve current methodologies for the collecting of land data.
e. Improve or establish means by which land information can be kept up to date.[5]

State of the Art in Fresno

Over the past 12 years, discussions have periodically been held among planning and other service agencies on the subject of data and information systems. The subject receives attention as part of the general plan program or other special studies related to community development. Invariably, these studies have not gotten beyond the stage of preliminary discussions even though local agencies agree in principle that an inter-related system of continuous data management is advantageous to reduce overlap and increase efficiency and aid in more effective and knowledgeable decision making. Unfortunately, the gap between agreement in

4 TRW, op.cit., p. 1-1.
5. Ibid., p. 1-7 to 1-9.

principle and actual practice is substantial.

The practices in gathering, maintaining and integrating local data on school enrollments, health statistics, land use and other development information have not changed essentially from ten years ago. One exception is the use of data processing techniques for the tasks of recording and manipulating mandated records. As yet electronic data processing in Fresno has not passed the stage of an accounting, tabulating and engineering problem-solving tool.

In the past decade, data have been collected because of the connection with a specific project or program, such as a transportation study, sewer and water project, or a general plan. As a consequence, much research either has been repeated because of a specific format requirement or because of some lack in basic consistency.

A summary of present practice in data collection and management as it applies to the City of Fresno is found in Vol. III, Supporting Documentation, Fresno C.D.P., Report on Phase One, Study Design, pp. 6-9. Pertinent portions of this report follow:

1. An "information system" as such does not exist within the City of Fresno. Such a system would include the operations of collecting data, manipulating it, and presenting it, and would provide for the control of

the processes involved.

2. A significant problem with present information handling practices within the city is the compartmentalization of files and application. Data are collected and filed in individual departments with little free exchange of information between departments regarding the collection and maintenance of data.

3. The City of Fresno concentrates heavily on information of an audit nature with less emphasis on management information. This is due primarily to the inability of departments to obtain supplementary information with present data processing methods, and to the nature in which departments must function in providing services to the public. Information essential for daily operating requirements is produced first with few resources left to produce supplementary information that might be used for management and planning.....

4. The most serious problem with current information handling practice is that it does not constitute a system; but is a set of different jobs that have grown up separately with essentially no relationship to one another. Consequently, information collection and processing in some departments requires more work than necessary, and some information of possible value to other

departments is not being disseminated appropriately. This condition has led to some duplication in data collection. Improved coordination of data collection and processing under a unified system is essential for the Fresno Community Development Program.

5. Many departments employ manual data processing techniques which are slow and error-prone. Such tasks as filing documents, copying data from one document to another, adding, subtracting, and multiplying and balancing columns of figures are repetitive and boring, with many opportunities to make mistakes....

6. The city's data processing requirements call for production of two types of information:

- Statistics of an audit nature for current operations.
- Indicators, trends, and related information for decision making and management planning....

As part of a 20 month study of the Fresno Community Development Program an analysis was made of the need for a Management and Information System. One of the proposals in the program calls for the establishment of a Data and Information System. It "will be designed to support the integrated Management and Information System and to illustrate the Community Management System."[6]

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6 City of Fresno, Fresno Community Development Program, A Report on Phase One-Study Design, Vol. II - Technical Plan, p. 34, Nov. 20, 1968.

This data and information system will include file structure, an indexing scheme, equipment needs, operational processes and organizational structure.

A beginning has been attempted for a data system with a meeting held in February 1969 by the Fresno Intergovernmental Data Processing Committee at which the problems and possibilities for intergovernmental data processing were explored. The Fresno City Unified School District was represented by Robert Webber, Roger Youngman and Tony Trovato. A Technical Coordinating Committee with Roger Youngman as chairman was set up to meet "regularly and often." A Policy Committee was established to meet once a month.

In the agencies of Fresno County government there is considerable use of computers to simplify and expedite the day-to-day routine work of the departments but there is no coordination nor comparability attempted between departments. The Health Department is machine tabulating its vital statistics; Welfare and the Assessor's Office are using computers to lighten routine housekeeping tasks; in the Recorder's Office the files are being indexed. Essentially, all that is being done, however, is to transfer data to tape so that record keeping is done by computers. No new tasks are being performed than were done manually previously. Very little manipulation or refinement

of the data is being done that would aid in decisions on physical and social planning and development.

The same picture can be painted of EDP as it concerns the schools, or the Federal Government. The Fresno City Unified School District conducts a great deal of its routine accounting and record keeping by computer and probably has progressed farther than many agencies in the use of computer based data. However, this is still preliminary to an integrated governmental data system and does little more than simplify record keeping which is an enormous task for a large school district.

Construction of a Data Register to Serve Fresno City Unified School District and Other Local Governments and Agencies

With the background of local practice and statewide developments, consideration is given to the construction of a data register for this area.(Fresno-Clovis Metropolitan Area, Fresno County or some other local designation.) Basic to its establishment are certain principles or criteria of a coordinated data system which include:

a) The system should be flexible and lend itself either to expansion or redesign in the light of increased experience and changing requirements.

b) The system should be related to the regular operating process of the system participants.

c) The system must be user-oriented.

d) The system must return benefits to data suppliers.

e) The system must provide adequate safeguards to protect the confidentiality of data and to insure proper authorization for use of data in the system.

f) The system must not exceed the manpower, equipment, or financial resources of the participating agencies.

g) The system must enjoy the full support of heads of the participating agencies.

h) The development of any system must bear in mind other statewide and regional information systems and changes in Bureau of Census' procedures.[7]

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[7]Harold H. Haak and W. Richard Bigger, A Coordinated Data System for Metropolitan San Diego, Public Affairs Research Institute, San Diego State College, Sept. 1, 1966, p. v.

There are two alternative methods for a data system that can be utilized. They are not mutually exclusive, particularly in the long run, but would function quite differently in the beginning.

The first method would be a centralized system using electronic data processing (EDP). This is the approach being investigated currently by the City of Fresno. (See Memo. dated January 24, 1969 to Neil Goedhard, City Manager from Walter P. Berg, Controller and Finance Director on subject of Long-range planning for Data Processing.) Since considerable investment in EDP hardware has usually already been made by a government agency for accounting type work there is a basis here for greater utilization of the equipment by converting other types of data--land use, population, etc.-- to a form that can be used by EDP. Equipment can all be located centrally with data storage, processing and retrieval handled at one location, or data storage can remain in the various agencies which will each have equipment capable of being plugged into an "information central" which would then serve as a collection and dispersal point for all agencies. The data processing and manipulation function generally would remain with the collecting agency.

There are several immediate problems inherent in this approach:

a) The system has only a very limited utility in the beginning and for a considerable period thereafter.

Each agency would have to solve the problems of making data comparable--both internally and to the rest of the system--of solving the legal barriers of its particular data cluster and of revamping its entire office procedures to comply with the requirements of EDP. These changes would proceed at various rates and with varying degrees of success in each agency. The agencies would plug into the system one by one and it would take considerable time before enough input was coming into the system regularly to make it useful to those agencies requiring information.

b) There is always the danger that the system would be dominated by the early users of it, that is, by those agencies which have the most "hardware" at present and the fewest problems in converting to the system. It could result in a system developed by expediency and not necessarily one best suited to the needs of all the users. Late comers would be faced with the problem of conforming to an already established system without much say in its construction.

c) The alternative to constructing a centralized EDP system on an agency-by-agency basis as each gets ready for conversion is to develop the system to

be initiated simultaneously in all cooperating agencies. This means all problems of accessibility, comparability, transformability, confidentiality, etc. must be faced and solved before the system can be started. If a start were made today on such a sophisticated approach it would probably be ten years before the preliminary development could be completed and the system made operational. Experience has shown in other cities that this type of development is costly and the politicians are reluctant to be committed to such long-term funding.[8]

d) The central EDP system is very expensive to initiate, although cost benefits accrue to its users once it is established. It also requires many man-hours of labor from the agencies which are already overburdened by routine tasks and very reluctant to commit time to experimental ideas.

e) Finally, the problems of securing cooperation on such a massive scale from already over-busy departments could be insurmountable.

A second approach would be a cooperative and coordinated system of collection and exchange of data. It need not

[8]Robert A. Clark, Data Bank or Information Systems Publications-With Emphasis on Land Use, Council of Planning Librarians, P.O. Box 229, Monticello, Ill., July 1968, p. p.2.

depend on EDP in its initial stages. Informally this method is being used at the present time but not too successfully. Such a system would ultimately be converted to EDP but could have great utility to its users in the meantime. This method begins with whatever methods of collection, storage and manipulation are presently used, surveys this information, catalogs the data sources and builds from there a progressively more sophisticated and refined system. There are problems and shortcoming to this approach also:

a) Although a great body of data becomes available from the beginning it is not comparable and may have only limited use thereby.

b) Some problems such as confidentiality (legal restrictions on use of data) must be solved for all agencies from the beginning. The initiation of the program may be slowed considerably.

c) Some agencies may not see the utility and need for the system and be uncooperative.

However, this second approach is being recommended for use in this study for several reasons:

a) There is a considerable immediate need for much of the data that would become available.

b) The initial expense in both dollars and man-hours would be less.

c) The chances seem more favorable for developing a truly unified and coordinated system if the agencies involved can have exposure to the various kinds of data available and can help in solving the problems of compatability, collection, maintenance and exchange as the system evolves. It would seem to be easier to solve many of these problems with use of the system than a priori.

d) This approach would require far less in the way of cooperative agreement initially than a central EDP system and hence might be feasible at the present time while the EDP may have to wait five to ten years.

"Any attempts to improve data accessibility must address three problem areas: locating the data, removing or lowering all barriers to the free and easy exchange of data, and improving the techniques to retrieve the data and deliver it to the requestor."[9]

First Phase Register

The program proposed would initially be most concerned with the problem of accessibility--locating the material and making it available to the users. The first step should be the development of a preliminary register of all local sources of primary data (information collected through the research

[9] TRW op.cit., p. 1-9.

efforts of the investigator--new information). This preliminary register should be a catalog or index listing all available data sources about the area--demographic, economic, sociologic, and geographic--all identified with the geographic base. The immediate purpose of such a register would be to increase economically the information available to any one agency or group and thereby improve the decision-making process, especially when it involves cooperation or coordination with other programs. A more long range objective would have the register serve as a basic first step toward establishing a computer-oriented data system that would require consistent and compatible data from all sources. The data register itself should provide a strong incentive to re-evaluating the individual data elements for inclusion in the final system.

The register could take several forms, but would contain essentially the same information. Its format could resemble the Yellow Pages of the telephone book--an index listing and cross-indexing all available data sources with a description of the data available. Or it could be similar to a library card catalog with the information listed by location, agency and type of data--all adequately cross-indexed. This type of register will permit the location and assessment of bodies of data without the need for direct examination. The requestor need only examine those specific items which,

from the register, would seem to be useful to his purpose.

The construction of this type of register is a logical endeavor: survey, analysis and compilation. The first step is a detailed survey of all agencies or groups in the area, as well as others concerned with the area (i.e. U.S. Bureau of Census) that are engaged in collecting geographically based data about the area--its people and the land. Such a survey will seek to determine the answers to specific questions such as types of data collected, terminology defined, frequency of collection, time span of data already gathered, date of next collection, storage media (maps, charts, written text, etc.) limitations in sharing (confidentiality), area covered, etc. The following questionnaire illustrates what such a survey form might contain. (See Example One)

The second necessary process is the analysis of the material collected in the survey, arranging it by specific data elements (i.e. population--age distribution, etc.) with a description of each agency's contribution to this element, defining terminology, in general cataloging all the information gathered in the survey.

The final step is collation of the material into a catalog or directory. This final step requires the construction of a comprehensive cross-reference system for retrieval of data in various ways. It must be arranged so that data

DATA REGISTER

Agency Responding:

1. Definition:
2. Source Identification:

   Information held by:
3. Storage Medium:
4. Volume:
5. Confidentiality and Security:
6. Geographic Coverage:
7. Collection of Information:
   a. Responsible Organization:
   b. Completeness:
   c. Accuracy:
   d. Method of Collection:
   e. Frequency of Collection:
   f. Date of Last Collection:
   g. Date of Next Collection
   h. Collection Mandated by Law:
8. Maintenance Information:
   a. Responsible Organization:
   b. Frequency of Updating:
   c. Date of Last Update:
   d. Date of Next Update:
9. Usage Frequency:
10. How Used (Primary):
11. How Used (Other):

Example One
Questionnaire for Register

can be retrieved from it by data elements, by geographical area or by collecting agency. The register must include complete enough information so that the requestor need not make false inquiries of the cooperating agencies for the data he needs. Example Two illustrates three different entries that might be made for one specific data element, Population of Fresno County, as collected by the County Planning Department.

In this initial format the register will have only limited application in making public the sources of data. The register would be no more than a data finding device. A user would describe his data requirements by including as complete a set of limitations on this data as he could supply. Thus, a user would be interested in a given data element only if it meets certain criteria that he specifies regarding, for example, geographic coverage, storage media, or age of data. These limitations would control the amount of total data available to him. The fewer limitations the more data the user implies as his requirement. This concept is analogous to using the Yellow Pages of the Telephone Directory: one may require a list of all automobile dealers; or he may limit his requirement to used automobile dealers; he may further restrict it to the geographical area in which used automobile dealers are located.[10]

[10] Ibid. p. 2-31.

Population - Fresno County

Col.Agency - Fresno County Planning Dept.
Frequency - Yearly estimate
Last Report - 1968 (Apr.)
Next Report - 1970 (U.S. Census)
Time Span - 1880 - 1960 (10 yr. U.S. Census reports)
1960 - 1968(annual estimates)
Geog.Base - 1880 - 1950 County only, with cities, towns & urban areas
1960 - 1968 Census tracts
Storage Medium - Tables

Fresno County
Population - Fresno County

Col.Agency - Fresno County Planning Dept.
Frequency - Yearly estimate
Last Report - 1968 (Apr.)
Next Report - 1970 (U.S. Census)
Time Span - 1880 - 1960 (10 yr. U.S. Census reports)
1960 - 1968 (annual estimates)
Geog.Base - 1880 - 1950 County only, with cities, towns & urban areas
1960 - 1968 Census tracts
Storage Medium - Tables

Fresno County Planning Department
Population - Fresno County

Col.Agency - Fresno County Planning Dept.
Frequency - Yearly estimate
Last Report - 1968 (Apr.)
Next Report - 1970 (U.S. Census)
Time Span - 1880 - 1960 (10 yr. Census reports)
1960 - 1968 (annual estimates)
Geog.Base - 1880 - 1950 County only, with cities, towns & urban areas
1960 - 1968 Census tracts
Storage Medium - Tables

Second Phase Register

From this beginning register it is possible to proceed to the second problem--removing or lowering barriers to free and easy exchange of data. At this stage all three elements of data--comparability, accessibility and transformability--must be involved. While the first phase register needs only a limited formal agreement between agencies on the need and willingness to exchange sources of data information, this second phase requires formal interagency agreements to assure that the data material in the register will be updated on a regular and continuing basis. It becomes necessary to subject the data to certain rules and regulations regarding procedures and responsibilities. These should be formalized by agreements between the agencies involved. These bilateral agreements would serve as a point of departure for clarifying these relations. Therefore, these agreements should cover a number of aspects which permit each potential participating agency to be completely aware of:

1. The extent of its responsibilities regarding the availability of data from its files.
2. The types of data that it would make available.
   The types of data which it may withhold for confidentiality reasons.
   The types of data it agrees to collect.

The types of data it agrees to keep up to date. Quality controls it should maintain in the collection and updating of data.

3. The extent of added processing and data manipulation services that it might provide.
4. The compensation it would be entitled to receive for providing data and services.

During this second phase every attempt should be made at standardization of the data sources. This might include, among others:

1. Standard map symbology and scale; standardization of data format, terminology.
2. Transformation of free text material into specific data items.
3. Standardization of data manipulation programs.
4. Quality control of data.
5. Control of frequency of collection.

Substantial savings could be realized by assigning responsibility for collection of a particular data element to one agency or group of agencies in order to eliminate the duplicate collections. For instance all data necessary to maintain current estimates of population might be collected only by the County Planning Department. They would, therefore, become the prime source for this type of data.

The following criteria should guide the decision of which agency should collect any given data element:

1. Operational Need - An agency which requires the data element for its normal day-to-day functions would have a greater interest in its collection and maintenance and would require the element most frequently; therefore, should have easiest access.

2. Ease of Collection - Much data is collected as part of the regular operating procedures of certain agencies. Routines can be carefully examined to determine if the needs of other agencies can be met concurrently.

3. Level of Detail Required - The agency which requires the greatest amount of detail and the highest level of accuracy for its operations would generally produce the best quality of data. In addition, the agency which requires data at the greatest level of detail would generally collect it using the smallest units. The smaller the unit of collection, the greater the opportunity for aggregation by various configurations.

4. Geographic Coverage - In general, certain efficiencies and better control can be realized if the

number of agencies collecting a data element can be minimized. Thus, agencies covering the widest jurisdiction would be preferable for collection of certain types of data.

5. Ability to Serve Outside Users - The resources and administrative structure of the data gathering agency must be such that the function of data dissemination could be incorporated into their normal operations.

6. Experienced Personnel - Although personnel can be trained for a particular data gathering task, it would be more efficient to utilize personnel who are thoroughly familiar with the various aspects of the data and the techniques for collecting it.

7. Statutory Requirements - Some agencies are specified as collectors by law.[11]

A final problem must be resolved during this phase of the register. It is not unusual for data to be collected without adequate means to keep it up to date. In addition data obsolescence is a persistent problem. Unless agencies using data regularly can count on a supply of current data their information base rapidly becomes outdated. One of the main purposes of a data register should be the establishment

11 Ibid. p. 2-44 to 2-46.

of means to keep data current. To do this several questions must be answered:

1. Which agency needs the data?
2. Which agency maintains the data presently?
3. Which agency regularly updates the data file most frequently?
4. Which agency provides the widest coverage?
5. Will there be a confidentiality limitation on the data if it is updated by a particular agency?
6. Will there be sufficient assurances that the data will be maintained to the required degree of quality and reliability?
7. If additional funds are required in order to maintain the data, will they be available to the assigned agency?[12]

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[12] Ibid. p. 2-50 to 2-51.

Third Phase Register

The third and final phase of the register is conversion to EDP--the establishment of a centralized data system. Only a brief summary of the problems and procedures will be given here. The design and development of this stage properly should be the responsibility of professionals conversant in the techniques and operations of EDP as it has evolved at the time this task is begun. Computer technology is still a developing science and many improvements and refinements will have been made in the decade ahead. However, during this third stage it will become advisable to:

1. Exploit the new technology for the purpose of upgrading techniques of data gathering and recording.

2. Exploit the new technology for the purpose of facilitating transformation from non-digital, amorphous storage media to computer-sensible media.

3. Organize clusters of data into data centers having service capabilities for centralized storage of data of participating agencies, data retrieval capability, file maintenance capability, and capability to service all agencies requesting participation.

4. Avoid excessive costs of designing and programing data center software by coordinating software

development, developing generalized methodologies, and implementing these methodologies for minimum computer configuration of all manufacturers (machine-independent software).

5. Develop user-oriented software for implementation by participating data systems that will require only a minimum of computer familiarity and no knowledge of programing.[13]

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[13] Ibid. p. 1-10 to 1-11.

Timing

The time span involved in completing phase one and phase two of the register, preliminary to EDP could vary over several years. A conservative estimate for getting the first phase register operational would probably be a year, at least. It would depend upon many factors: the budget committed to its development, the man-hours made available in the cooperating agencies, the urgency felt for use of a register, etc. Before the second phase should commence agencies need time to become familar with and use the preliminary register. Many inconsistencies between data sources, problems with manipulation and areas of insufficient data should become more apparent and steps taken to correct them. Overall this type register should be given an adequate trial by fire before proceding with the second phase. Areas of greatest utility should be identified and data requirements of various agencies should be pinpointed. This process should assure adequate insight into the need for a more sophisticated and formalized register. A year or two of use with the first phase register would seem logical.

Construction and development of the second phase will be a more costly and time-consuming process than the first phase. The development of this phase and use of the resultant register would be expected to cover several years at least.

The final phase of converting to EDP will be dependent upon many factors: the amount of hardware already available, the budgetary requirements of this and other programs, etc. No estimate can be made at this writing of the time required.

Recommendations

1. An integrated and continuing system of data related to land and people has been recognized as a critical need in the Fresno-Clovis Metropolitan Area for at least a decade. As a first step, a technical working committee of the primary data generators and users should be formed. The initiative could come from three sources:

   a. The Intergovernmental Data Processing Policy Committee. Its present composition would need to be enlarged to include other data generators and users, such as planning departments, the Health Department and Assessor.

   b. If it was felt that the above committee should retain a more specialized function, initiative for the formation of this interested group could come from the Fresno Community Development Office, which is responsible for the development of the Management Information System, part of the Community Development Program project.

   c. A third alternative for initiative is the Fresno-Clovis Technical Coordinating Committee since it has been assigned overall responsibility for area-wide continuing planning.

Local government agencies which generate and use primary and secondary data on land and people include, but are not limited to, the following:

Fresno County Government

- Planning Department
- Schools Office
- Public Health Department
- Public Works Department
- Assessor's Office
- Sheriff's Department
- Welfare Department
- Parks and Recreation Department
- Agricultural Commissioner

Fresno City Government

- Planning and Inspection Department
- Public Works Department
- Community Development Office
- Model Cities Program
- Police Department
- Fire Department
- Redevelopment Agency

Fresno City Unified School District.

2. Preliminary to initiation of the register the above technical committee should come to some consensus on

the long-range and intermediate goals which will guide development of the register and subsequent stages of the information system. This step is essential to provide a framework against which to test the working decisions that actually implement the program.

3. The data register described in the foregoing section of this report is recommended as the most feasible approach for the Fresno-Clovis Metropolitan Area. It should be stressed that the need for information is urgent and that the proposed procedures not only are those considered to be most immediately attainable and useful but also those most economical and complementary to long-range information system goals.

4. As to the responsibility for construction of the first stage register, several alternatives are available:

   a. The Fresno Community Development Office, now responsible for the Fresno Community Development Program which is conceived as a continuing effort.

   b. The Fresno County Planning Department because of its county-wide research responsibilities.

   c. The third alternative, which should be seriously considered, is the Fresno County Library. Already an information register in practice, it has recently

inaugurated a Government Research Library. The County Librarian states that "in order to help us in this respect, the various agencies of the City and County of Fresno have agreed to provide copies of each document published by them during the year." It would appear that the library, in discharging its traditional role of collecting, storing and disseminating information could provide the expertise necessary to carry out this task as part of its stated objectives in establishing and maintaining a government research library.

PROJECT PUBLICATIONS

PHASE I — NEEDS ASSESSMENT

Staff Research Reports

1. Brainstorm — Needs Perceived by School Staff
2. Speak-Up — Needs Perceived by Community
3. Student Speak-Up — Needs Perceived by Secondary Students
4. School Staffing
5. Analysis of Achievement
6. Problems Perceived by Educational Leadership

County Schools Survey

7. Vocational Occupational Needs Survey (published by County Regional Planning and Evaluation Center - EDICT)
8. > Other County School Needs Survey Reports (EDICT)
9. >

TASK FORCE

Educational Content Fields

10. Reading
11. Language
12. Mathematics
13. Science
14. Foreign Language
15. Cultural Arts
16. Social Science
17. Physical Education

Other Educational Areas

18. Teaching/Learning Process
19. Special Education
20. Guidance
21. Health
22. Student Personnel
23. Adult Education
24. Vocational Education

Urban Physical Factors

25. Urban Physical Factors

Urban Social and Human Factors

26. Relevance and Quality of Education for Minorities
27. Special Needs of Mexican-Americans
28. Special Needs of Negroes

PROJECT PUBLICATIONS

PHASE II — MASTER PLAN DEVELOPMENT

29. Conclusions from Needs Assessment Publications

30. Summary — Fresno Educational Needs Assessment

31. The Process of Educational Planning

32. Mission Objectives

33. School Organization Patterns
    The Educational Park
    The Middle School

34. Interagency Educational Planning
    Community Planning Process

35. Interagency Educational Planning
    Community Planning Register

EDUCATIONAL MASTER PLAN

volume A	Summary
volume B	Configurations: Design for the Future
volume C	Implementation: Planned Change